



DATA SHEET

WL12-3N1161

W12
Photoelectric sensors

SICK

Sensor Intelligence

PHOTOELECTRIC SENSORS

WL12-3N1161

ORDERING INFORMATION

Type	part no.
WL12-3N1161	1041455

Further device versions and accessories at www.sick.com/W12



Illustration may differ



DETAILED TECHNICAL DATA

FEATURES

Functional principle	Photoelectric retro-reflective sensor	
Functional principle detail	Without reflector minimum distance (autocollimation/coaxial optics)	
Sensing range max.	0 m ... 2 m ¹⁾	
Sensing range	0 m ... 1.3 m ¹⁾	
Emitted beam	Light source	LED ²⁾
	Type of light	Visible red light
	Light spot size (distance)	Ø 2 mm (90 mm)
Key LED figures	Wave length	640 nm
	Adjustment	Potentiometer, 5 turns
Angle of dispersion	Approx. 5°	
Special features	Without polarisation filter	
Special applications	Detecting small objects	
Items supplied	2 x clamps BEF-KH-W12, incl. screws	

¹⁾ Reflector PL80A.

²⁾ Average service life: 100,000 h at T_u = +25 °C.

SAFETY-RELATED PARAMETERS

MTTF _D	1,388 years
DC _{avg}	0 %

ELECTRONICS

Supply voltage U_B	10 V DC ... 30 V DC ¹⁾												
Ripple	< 5 V _{pp} ²⁾												
Current consumption	40 mA ³⁾												
Protection class	III												
Digital output	<table border="0"> <tr> <td>Type</td> <td>NPN</td> </tr> <tr> <td>Switching mode</td> <td>Light/dark switching</td> </tr> <tr> <td>Signal voltage NPN HIGH/LOW</td> <td>Approx. V_S / < 2.5 V</td> </tr> <tr> <td>Output current I_{max}</td> <td>≤ 100 mA</td> </tr> <tr> <td>Response time</td> <td>≤ 330 μs ⁴⁾</td> </tr> <tr> <td>Switching frequency</td> <td>1,500 Hz ⁵⁾</td> </tr> </table>	Type	NPN	Switching mode	Light/dark switching	Signal voltage NPN HIGH/LOW	Approx. V_S / < 2.5 V	Output current I_{max}	≤ 100 mA	Response time	≤ 330 μs ⁴⁾	Switching frequency	1,500 Hz ⁵⁾
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Output current I_{max}	≤ 100 mA												
Response time	≤ 330 μs ⁴⁾												
Switching frequency	1,500 Hz ⁵⁾												
Output function	Complementary												
Circuit protection	A ⁶⁾ C ⁷⁾ D ⁸⁾												
Special feature	Focused optics												

¹⁾ Limit values when operated in short-circuit protected network: max. 8 A.

²⁾ May not fall below or exceed U_V tolerances.

³⁾ Without load.

⁴⁾ Signal transit time with resistive load.

⁵⁾ With light/dark ratio 1:1.

⁶⁾ A = V_S connections reverse-polarity protected.

⁷⁾ C = interference suppression.

⁸⁾ D = outputs overcurrent and short-circuit protected.

MECHANICS

Housing	Rectangular						
Dimensions (W x H x D)	15.6 mm x 48.5 mm x 42 mm						
Connection	Cable, 4-wire, 2 m ¹⁾						
Connection detail	<table border="0"> <tr> <td>Conductor size</td> <td>0.25 mm²</td> </tr> <tr> <td>Length of cable (L)</td> <td>2 m ¹⁾</td> </tr> </table>	Conductor size	0.25 mm ²	Length of cable (L)	2 m ¹⁾		
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Material	<table border="0"> <tr> <td>Housing</td> <td>Metal</td> </tr> <tr> <td>Front screen</td> <td>Plastic, PMMA</td> </tr> <tr> <td>Cable</td> <td>Plastic, PVC</td> </tr> </table>	Housing	Metal	Front screen	Plastic, PMMA	Cable	Plastic, PVC
Housing	Metal						
Front screen	Plastic, PMMA						
Cable	Plastic, PVC						
Weight	200 g						

¹⁾ Do not bend below 0 °C.

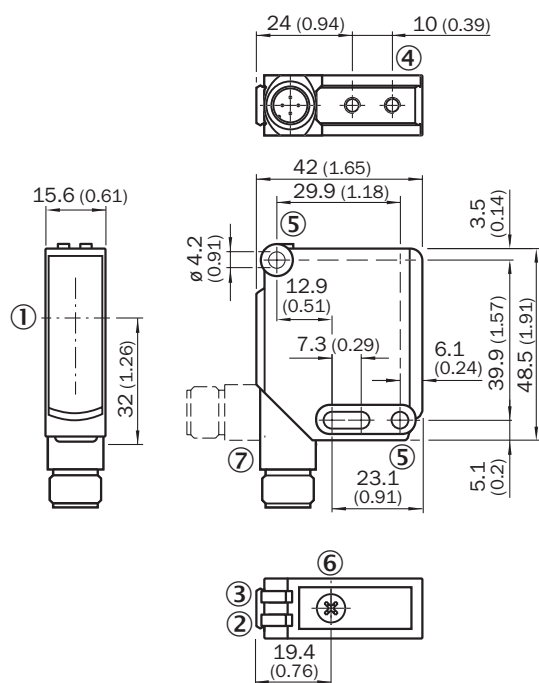
AMBIENT DATA

Enclosure rating	IP66 IP67 IP69K
Ambient operating temperature	-40 °C ... +60 °C
Ambient temperature, storage	-40 °C ... +75 °C
UL File No.	NRKH.E181493 & NRKH7.E181493

CERTIFICATES

EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓
China RoHS	✓
ECOLAB certificate	✓
cULus certificate	✓
Photobiological safety (DIN EN 62471) certificate	✓

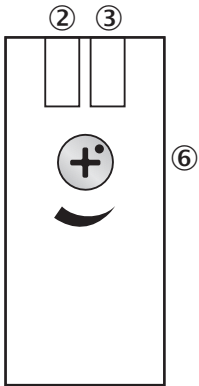
DIMENSIONAL DRAWING WL12-3, WSE12-3



Dimensions in mm (inch)

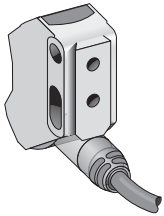
- ① Optical axis
- ② LED indicator yellow: Status of received light beam
- ③ LED indicator green: Supply voltage active
- ④ M4 threaded mounting hole, 4 mm deep
- ⑤ Mounting hole, Ø 4.2 mm
- ⑥ Sensitivity control: potentiometer
- ⑦ Connection

ADJUSTMENTS WL12-3, WSE12-3

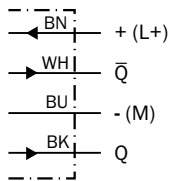


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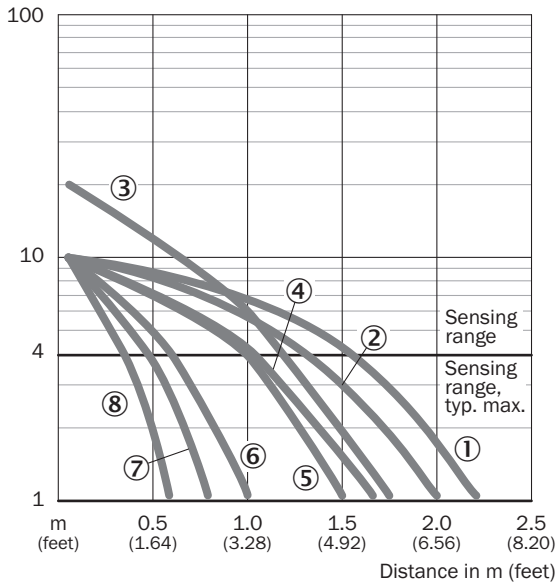
CONNECTION TYPE



CONNECTION DIAGRAM CD-094

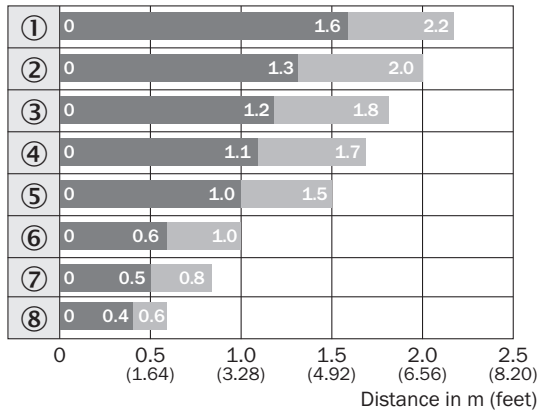


CHARACTERISTIC CURVE WL12-3, FOCUSED



- ① Reflector C110A
- ② Reflector PL80A
- ③ Reflector P250
- ④ Reflector PL50A
- ⑤ Reflector PL40A
- ⑥ Reflector PL30A
- ⑦ Reflector PL20A
- ⑧ Reflector DG/IRF6000

SENSING RANGE DIAGRAM WL12-3, FOCUSED



- Sensing range
- Sensing range typ. max.

- ① Reflector C110A
- ② Reflector PL80A
- ③ Reflector P250F
- ④ Reflector PL50A
- ⑤ Reflector PL40A
- ⑥ Reflector PL30A
- ⑦ Reflector PL20A
- ⑧ Reflective tape Diamond Grade

Further information as well as suitable accessories, example applications and downloads such as CAD dimensional models, operating instructions and software can be found at www.sick.com/1041455



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SICK AT A GLANCE

SICK is a leading global technology company for intelligent sensors and integrated solutions in industrial automation. Our technologies set benchmarks, making your industrial processes more efficient, safer and more sustainable – both in logistics and manufacturing operations.

SICK combines sensor intelligence with industry expertise and certified consulting services. We provide the ideal foundation for scalable as well as tailor-made automation solutions and create added value along the entire value chain. Our close partnerships with our customers are more than just a promise: Together, we optimize productivity, improve quality, protect health and safety, and help build a sustainable future. All with empathy and trust.

Since 1946, we have been developing innovative technologies with passion and a pioneering spirit. With a global network in around 40 countries, SICK has a global presence and is always close by. The company's headquarters are located in Waldkirch near Freiburg, Germany. Our customers benefit from our understanding of both local and global requirements, which enables us to deliver tailor-made solutions

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